REMARKS

Claims 1-19 stand rejected as obvious under 35 U.S.C. § 103(a). New claims 20-24 are added herein. As such, claims 1-24 are currently pending in the application. Independent claims 1 and 7 are amended herein to more clearly distinguish over the prior art references. For the reasons set forth below, it is believed that claims 1-24 are patentable under 35 U.S.C. § 103(a) over the Hoyle patent and the Il'in reference.

I. Response to rejection of claims 1-13 and 16-19 under 35 U.S.C. § 103 (a)

Claims 1-13 and 16-19 are rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent 4,037,102 to Hoyle et al in view of the Il'in publication. Claims 1 and 7 are independent claims and all of the other claims depend from and include all of the limitations of claims 1 and 7. In summary, the October 30, 2002 final Office action recognizes that Hoyle does not disclose or suggest a device capable of detecting single photons as required by claims 1 and 7 of the subject application. It is asserted that Hoyle teaches a device that operates below the critical temperature, i.e., below the superconducting transition region. It is also asserted that Il'in teaches that superconducting thin film radiation detectors operating in the transition temperature region are likely to be effective in detecting single photons. As such, it is concluded that one of ordinary skill in the art in possession of the Il'in reference would conclude that the device of Hoyle has a reasonable chance of success at detecting single photons.

Claims 1 and 7 of the present application were previously amended to provide a single photon detector requiring maintenance of a superconducting strip below its critical temperature. Importantly, in stark contrast to the invention defined in claims 1 and 7, the Il'in reference teaches a detector employing a superconducting strip that does *not* function when it is maintained below its superconducting temperature. As such, it is respectfully submitted that the combination of Hoyle and Il'in is improper and cannot render claims 1 and 7 unpatentable under 35 U.S.C. § 103(a).

Moreover, Claim 1 is amended herein to further include the limitation of "time resolving said light directed unto said superconducting strip." In addition, claim 7 is amended herein to further include the limitation of "a time measuring device coupled with the superconducting film,

the time measuring device configured to time resolve the detection of the single incident photon."

Neither the Hoyle reference nor the Il'in reference discloses or suggests time resolving particle detection. The Hoyle reference generally discusses photon counting, output pulse height, and output pulse duration. For example, Hoyle states at col. 8, lines 30-41 that:

> Using the above-described techniques output pulses of approximately 100 μV height with a duration of 0.1 to 1.0 ms were recorded. The duration of the pulses is believed due to the thermal conduction process between the thin-film and the glass substrate. As noted previously, output pulse heights were found to be essentially the same for a wide range of particle energies i.e., for particles of energies between approximately 100eV and 1 keV. It is anticipated that the pulse height for some configurations of the present invention may remain linear for even larger ranges of particle energies.

However, Hoyle does not disclose or suggest time resolving the detection of particles as now required by claims 1 and 7. Moreover, as discussed above, the Hoyle device is incapable of detecting a single incident photon as originally required by claims 1 and 7.

The Il'in reference discusses the response time constant (τ) of the detectors discussed therein. However, as with the Hoyle patent, the Il'in reference does not disclose or suggest time resolving particle detection. Moreover, as stated above, the Il'in device does not operate below the critical temperature as required by the previous amendments to claims 1 and 7.

For at least the reasons set forth above, it is believed that claims 1 and 7 as amended herein and previously amended are not rendered obvious under 35 U.S.C. § 103(a) over the combination of Hoyle and Il'in. Moreover, claims 2-6, 16, 17, and 20-22 depend from and include all of the limitations of claim 1, and claims 8-15, 18, 19, and 23-24 depend from and include all of the limitations of claim 7; thus, claims 2-6 and 8-24 are also not rendered obvious for at least the same reasons as claims 1 and 7. As such, claims 1-24 are believed to be in condition for allowance and such action is earnestly requested.

II. Response to rejection of claim 14 under 35 U.S.C. § 103(2)

Claim 14 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Hoyle in view of Il'in as applied to claim 7 and further in view of U.S. Patent 4,987,305 (Bornstein). Claim 14 depends from and includes all of the limitations of claim 7. Thus, for at least the reasons

discussed above in section I, it is respectfully believed that claim 14 is not rendered obvious under 35 U.S.C. § 103(a) over Hoyle, Il'in, and Bornstein, whether considered alone or in combination. As such, the Applicants submit claim 14 is also allowable and such indication is respectfully requested.

III. Response to rejection of claim 15 under 35 U.S.C. § 103(a)

Claim 15 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Hoyle in view of Il'in as applied to claim 7 and further in view of U.S. Patent 5,828,068 (Weirauch). Claim 15 depends from and includes all of the limitations of claim 7. Thus, for at least the reasons discussed above in section I, it is respectfully believed that claim 15 is not rendered obvious under 35 U.S.C. § 103(a) over Hoyle, Il'in, and Weirauch, whether considered alone or in combination. As such, the Applicants submit that claim 15 is also allowable and such indication is respectfully requested.

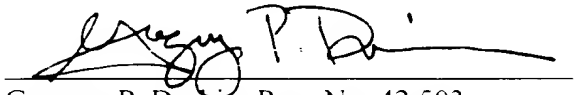
CONCLUSION

For at least the reasons discussed herein, claims 1-24 are believed to be in form for allowance, and such indication is earnestly requested. If there are any questions regarding the above, please contact the undersigned.

While a petition for a two month extension of time and applicable fee is filed contemporaneously herewith, if any additional extensions or fees are required, please consider this a petition therefor and charge deposit account 190603 accordingly.

Signed at Denver, Colorado, this 31st day of March, 2003.

Respectfully submitted,



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